Gateway

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The ARRL Packet-Radio Newsletter

CONVENTION REPORT

At the ARRL National Convention in San Diego, Pac-Comm Packet Radio Systems announced two new packet digipeater products. The DR-200 dual-port controller is designed to provide an inexpensive, off-the-shelf packet switch to move traffic on inter-LAN networks. The DR-100 provides basic, single-port controller capability in a ruggedized package at low cost. This model is intended for applications where a single-frequency repeater is desirable.

According to Pac-Comm, both units share the same digital design. Based on the TNC 2 design, they use a Z80 CPU with up to 32 kbytes of EPROM and up to 32 kbytes of RAM for buffering, configuration parameters, etc. Packet HDLC operations are handled by a Z8530 Serial Communications Controller. The 8530 manages two independent HDLC ports, which incorporate internal NRZI clock recovery, eliminating the need for external state machines. The DR-200 has two independent 300/1200-baud modems using the AMD 7910 "World-Chip." The DR100 has a single 7910. Each modem channel also has a standard disconnect header for accessory modems. Both channels have PTT line time-out timers and the CPU has a watchdog timer. Both models support two methods for communications with external terminals. The second port on both models has a connection port for TTL level serial data. Pac-Comm has an accessory adapter cable to attach an RS-232 device to this port. If your application needs to utilize both radio ports and still have a terminal connection, there is an RS-232 daughterboard which mounts inside the cabinet. The CPU reset line is brought out to the connection panel for external/remote reset control. Overall, the processor, memory and interrupt architectures are very similar to the TNC 2 series.

The DR-series are housed in a new extruded aluminum case which is externally identical to the standard TNC 200 case. This design has an extra set of internal mounting rails in its upper portion which can be used to house accessory modems, data interfaces, and so forth, in the shielded environment. The cabinet ends are metal plates which provide good shielding for all internal components. To eliminate the problems of connector corrosion and vibration, all connections to the controllers are soldered through feedthrough capacitors mounted in the cabinet end-plates.
Several versions of dual-port software are available at no cost through PacComm. The "Dual-Port Digipeater" program written by Jon Bloom, KE3Z, has been adapted to the DR-200. It uses an easily implemented routing algorithm based on default SSIDs and an explicit routing table.

Another program is a dual-port version of the "AX.25 Level 3 Packet Switch" from Howie Goldstein, N2WX. This program implements the virtual circuit approach to networks and has been widely seen in a preliminary single-port version running on the TNC-200 and other TNC 2 clones. This program is available for both the DR-100 and DR-200. The other single-port program is an adaptation of PacComm's Version 1.1.3 which provides standard AX.25 Level 2 Version 2 digipeater support. All software has been enhanced to utilize the optional serial ports for setting site-specific parameters, etc. Any one of these programs may be selected with the purchase of a Pac-Comm digital controller and will be provided at no charge. Source listings will be included if permitted by the author. Additional copes are available for the cost of reproduction and documentation.

From W3VS

EXERCISE NIGHT TANGO

On Thursday, Aug 28 and Saturday Aug 30, an emergency preparedness test was conducted under the auspices of the National Communications System (NCS). In each session four locations were involved and simulated emergency message traffic was to be handled between all locations via several communications channels: MARS, CAP and amateur. In the case of the amateur channels, packet radio and NTS were tested in parallel. On Thursday night, the four locations involved were:

Washington DC
Gulfport MS
Portland ME
Eau Claire WI

and on Saturday the four locations were:

Washington DC
Monroe LA
Rochester MN
Concord NH

In both sessions W3IWI acted as the Washington packet 'hub'. W3IWI activated a WØRLI-type HF BBS on 14107 kHz to operate in parallel with the normal Baltimore/Washington W3IWI VHF LAN BBS.

First, lets review Thursday night: 3 Messages received from Tom Boots (the Washington NCS representative) at 0000Z by telephone. The

messages were then typed into the computer on the "main" W3IWI BBS and passed via 221.01 to the W3IWI HF BBS. The 3 messages were dispatched on 14.107 as follows:

Gulfport MS traffic went direct to WA5DVV (Gulfport) who operates an excellent HF BBS system at approximately 0030z and was delivered immediately to the Gulfport NCS representative by telephone. Shortly thereafter, WA5DVV received his outgoing traffic and passed it to W3IWI with similar speed. WA5DVV's narrative (transmitted by packet) follows:

"Not sure how ARRL Packet message got on the NAVY MARS circuit ... but it did! We did not send a message out to Portland, ME from here. NCS could not find a packet receive station with HF capability in Portland so they scratched traffic from Gulfport to that city. Only incoming traffic to Gulfport was from your station. Washington, DC traffic was delivered to Gulfport NCS REP 29 minutes after it left your area. This beat the other communications systems by at least 30 minutes. Packet came in # 1 out of all messages received here in Mississippi.

"Thanks Tom for your help. See you Saturday morning when we try to assist you in delivering traffic to Monroe, LA.

73, Pat"

Portland ME sent to WA5DVV approx 0030z for relay to New England. He passed it to WØRLI at 0115z. Message is somewhere in MA/NH/ME and hasn't been heard from. But the Washington NCS rep told me to not even try since no packeteer had been found to cover the scene in Maine. Eau Claire WI traffic was sent by two paths: WD9DHI (Cedarburg WI, near Milwaukee) at 0040Z and NØAN (Northern Iowa) at 0110z. WD9DHI delivered his copy by phone to Eau Claire NCS Rep. NØAN reports alternate copy of message is in Rochester MN at 0230Z. No message has yet received from Eau Claire but WD9DHI said they would call him so he could send response. Given the comments from WA5DVV above, it would appear that Eau Claire did not even try to send their messages by packet. While all this was going on, the W3IWI HF BBS handled 8 other messages and the 'main' Balto/Wash LAN VHF system was active with local users oblivious to all the happenings.

Now let us turn to Saturday morning. Here things didn't go as smoothly.

W3IWI received a call from Tom Boots at about 1345Z with the three outgoing messages, which were entered and transferred to the HF BBS like Thursday. The plan was to send the Monroe LA message to AE5V. NØAN in Iowa had proven Thursday night that he could relay a message to the WDØHEB BBS in Rochester so that was the path of choice there. We planned on the WB1DSW BBS handling the NH traffic (with WØRLI as an alternate); since the southern end of EASTNET's VHF links have been badly broken with the nonavailability of the critical WB4APR-6 digipeater since June, we elected to route the NH message by HF using the WA5DVV BBS as a relay station. W3IWI connected with AE5V to pass the traffic only to find that AE5V did not seem to be familiar with BBS procedures. A lot of on-the-air coaching and several abortive attempts later, the traffic between Washington and Monroe was successfully passed. W3IWI then connected with WA5DVV and NØAN to pass the traffic to the other two locations.

AE5V seemed to be having trouble raising either WØRLI or WB1DSW and then passed me the traffic for those locations. A bit later NØAN sent me a message indicating that the traffic had been sent onwards to Rochester. Then WA5DVV connected and asked me to re-send the NH message -- Pat had a power failure at a crucial time and had lost the NH message. I then watched while WA5DVV tried unsuccessfully to connect with either of the New England stations. Then I started seeing both WØRLI and WB1DSW coming in on short skip, so I tried to connect with DSW. Every time I would connect I got an immediate "*** LINKED TO W1TN" message; I had never seen this happen and the auto-forwarding BBS software went zonkers when it didn't see the correct prompt. Finally while I was trying to forward to DSW, W1TN starts sending his DC-bound traffic to me. Now BBSs are 'locked up' when they are in a forwarding mode, so all I could do was to grope for pencil and paper and (heaven forbid!) write the message down by hand. Through sheer dumb luck, the Monroe traffic went thru this fouled up path, but I could not for the life of me get the traffic from DC thru with a confirmation that it had been received.

Meanwhile WØTN (not to be confused with W1TN) connected and sent the Rochester traffic for Washington. Rick said he had picked it up from a local BBS and did not believe that the inbound traffic had been received. I still don't know if the NØAN/WDØHEB path worked and if that traffic was received in Rochester and haven't the foggiest idea why that path was not used for the return traffic. All of this happened in the midst of the QRM associated with a Saturday on a holiday weekend. Although 14107 kHz is supposed to be the de facto BBS forwarding frequency on 20 M, there are an incredible number of casual users and 'BBS-hoppers' who tie up the channel by trying to dump 10-kbyte files on HF. Many 14107 BBSs have closed access to such casual users but those few that are open lead to a lot of problems. The W3IWI BBS had to be configured in the 'open' mode for NIGHT TANGO due to uncertainties in just who would be connecting for the exercise. Despite disclaimers in the sign-on banner that the BBS was only for mail forwarding and was not the 'infamous W3IWI VHF BBS' a number of casual users just had to connect to find out what was happening, and then proceeded to list all available messages and files several times.

Lessons learned:

(1) BBS-based paths with well equipped stations like WA5DVV, NØAN, WD9DHI and W3IWI can handle this type of traffic very well. Packet is perfect for point-to-point links and the message-based BBS forwarding works well between such stations.

(2) We should have picked a less busy frequency (14105 or 14109) to help avoid the QRM problems.

(3) The unskilled operator problem caused considerable delays. Additional test exercises are needed to help refine

proceedures for handling emergency traffic by packet.

(4) The list of linked BBS stations maintained by WØRLI was a godsend in planning stations for long-haul forwarding duties. That list would be even more valuable if it included information on other cities served by major forwarding nodes (who would have guessed that McCallsburg IA was the best routing for Rochester MN or that Clarksville MD was the destination for Washington DC?). Linking maps are basically useless; what we need is the packet equivalent of a telephone book!

From W3IWI

CENTRAL CALIFORNIA PACKET

Central California now has a permanent coastal digipeater connecting the Los Angeles area with the San Francisco and Sacramento areas. N6LYF-1 is now operating from Rocky Butte at 3300 feet above sea level. This location, six miles east of Hearst Castle, operates with a cardioid pattern toward the Central Valley. At the present time, operation is limited to 145.05 MHz.

From W6HDO

TAPR TO CHANGE OFFICE HOURS

The hours of operation of the Tucson Amateur Packet Radio (TAPR) office will be changed to a temporary schedule according to Pete Eaton, WB9FLW, vice-president of the organization. For the next three months, the office will be open on Tuesday and Wednesday only. For more information, you may contact TAPR at (602) 746-1166.

From WB9FLW

DRNET WILL MOVE TO COMPUSERVE'S HAMNET

The Electronic Information Exchange System (EIES) sponsored by the New Jersey Institute of Technology, has provided members of TAPR and other packeteers involved with packet-radio Research and Development, a forum for discussion and exchange of information. This electronic forum, known as DRNET, has in recent years provided a valuable service. However, since DRNET is primarily a closed system, other interested packeteers have been unable to gain access to the forum.

This is likely to change in the next few weeks when members of the TAPR Board of Directors vote to abandon DRNET and take up permanent residence on CompuServe's HamNet. According to Pete Eaton, WB9FLW, vice president of TAPR, members in a recent questionnaire, selected CompuServe as the system they would like to see used instead of DRNET. Although members of the board have yet to vote, it is reported that this is only a formality, and we should start to see activity on HamNet by the beginning of November.

Ed.

SETTING THE MFJ 1270 TNC DATE AND TIME

I have only been on packet for a short time, but it is probably one of the more interesting ways to communicate devised. I use the MFJ 1270 TNC and find it a delightful unit. One of my few complaints has been the loss of clock timing each time the unit is powered down. Entering the day and time function from the keyboard is a bit of a hassle. This is especially true when I am using the unit mobile or away from the shack where my UTC clock resides. This BASIC program for the Radio Shack Model 100 makes it easy to set the day function for a TNC 2 or clone.

The program derives the UTC date and time from the computer's clock. The program assumes that there is a six-hour difference between local and UTC. It also assumes that the TNC parameters are set for 1200 bauds, 8-bit word length, no parity and 1 stop bit. Once the program has been activated, it will first read the date and time from the computer's clock, then convert it to UTC and finally send it to the TNC. After the date and time are set in the TNC, the BASIC program calls for the on board TELCOM program so it is not necessary to go back to the menu after the date/time setting operation. All that is necessary is to press function key 4 on the Model 100.

For a different local time zone than mountain daylight time line 40 will have to be changed. At the end of the line is the statement "Z4=Z4+6." The number 6 is the offset in hours for converting from local to UTC. Simply change this to the correct number for your local time zone.

In line 90, the statement OPEN "COM:58N1E..." sets the RS-232 parameters to 1200 bauds, 8-bit word length and no parity. Keep in mind that this sets the protocols between the Model 100 and the TNC, not from the TNC to the radio.

If you do not wish to go directly to TELCOM, but rather back to the Menu when time/date setting is complete, change line 999 in the program from "CALL 20806" to "MENU."

```
1'Jim Gerritz WA4FMA 4111 S. Elliot Sheridan, CO
80110
2'for MFJ-1270 TNC
3'Sets time and date to UTC
4'At the end of line 40 the statement
7'Z4=Z4+6 is the conversion from local to UTC the
+6 is 6 hours from MDT to UTC
8'Change this number for a different time zone
9CLS
10 PRINT"Setting packet time and date to UTC."
15 ?"TNC at 1200 baud. Output Parameters"
17 ?"58N1E-1200 baud;8 bit;no parity"
20 FOR D=1 TO 500:NEXT D
40 Z3$=TIME$:Z4=VAL(LEFT$(Z3$,2)):Z4=Z4+6
41 Y$=DATE$
50 IF Z4>23 THEN Z5=Z4-24:Z4=Z5
60 Z4$=STR$(Z4)
62 IF Z4<10 THEN Z4$="0"+RIGHT$(Z4$,1)
69 Z4$=Z4$+MID$(Z3$,4,2)
70 Y1$=RIGHT$(Y$,2)
75 Y2$=LEFT$(Y$,2)
80 Y3$=MID$(Y$,4,2)
82 Y3=VAL(Y3$):TL=VAL(LEFT$(TIME$,2))
83 IF Z4<10 AND TL>14 THEN Y3=Y3+1
84  Y3$=STR$(Y3):Y3$=RIGHT$(Y3$,2):IF  Y3<10  THEN
Y3$="0"+RIGHT$(Y3$,1)
```

```
85 T1$=Y1$+Y2$=Y3$+RIGHT$(Z4$,4)
90 OPEN "COM:58N1E"FOR OUTPUT AS 1
100 PRINT#1, "DAY  ";T1$:GOSUB2000
970 CLOSE 1
980 CLS:PRINT"Time and date set":GOSUB2000
999 CLS:CALL 20806
2000 FOR D=1TO1000:NEXTD:RETURN
```

From WA4FMA

NEXT GATEWAY

The normal subscription for Gateway is 25 issues. A few quick calculations will tell you that there should be 26 issues in a 52-week year. To compensate for this, Gateway is delayed one week twice each year. The first one-week delay for volume three will occur with the next issue of Gateway. Therefore, there will be no Gateway dated October 3, 1986. Look for Gateway Volume 3, Issue 4 on October 10th.

Ed.

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